

Chesterville Wastewater System

Sewage Works # 110000114

Annual Report

Prepared for: Township of North Dundas

Reporting Period of January 1st – December 31st 2021

Issued: March 31, 2022

Revision: 0

Operating Authority:



This report has been prepared to meet the requirements of ECA #6657-BPYPVL

Table of Contents

Operations and Compliance Reliability Indices	1
System Process Description.....	1
Wastewater System Flows	2
Raw Flows	2
Effluent Flow.....	2
Effluent Quality Assurance or Control Measures	3
Effluent Quality	3
Carbonaceous Biochemical Oxygen Demand (5-Day)	4
Total Suspended Solids.....	4
Total Phosphorus.....	5
Total Ammonia Nitrogen	6
Hydrogen Sulphide	7
pH.....	8
Acute Lethality.....	8
Operating Issues	9
Maintenance	9
Flow Meter Calibration and Maintenance	9
Maintenance Summary	9
Notice of Modifications	9
Sludge Generation	9
Summary of Complaints.....	10
Summary of Abnormal Discharge Events.....	10
Bypass/Overflow/Spills.....	10
Performance Assessment Reports.....	A
Flow Meter Calibration Reports	B
Ministry Correspondence.....	C

Operations and Compliance Reliability Indices

Compliance Event	# of Events
Environment Canada Inspections	0
Ministry of Environment Inspections	0
Ministry of Labour Inspections	0
Non-Compliance	1
Spills/Overflows/Bypasses	0
Sewer Main Blockages	0

System Process Description

Chesterville's wastewater system consists of a gravity fed sanitary sewage collection system with three pumping stations and a wastewater treatment lagoon. The main pumping station is located on Water Street and discharges directly to the lagoon. There is also a pumping station located on Lori Lane which was constructed in the early 1990's to service the Thompson subdivision. A third pumping station is located at the lagoon and services the industrial site located at 171 Main Street North. This pumping station is currently offline.

Chesterville's sewage treatment system was originally constructed in the 1970's and included only one lagoon cell until a second cell was added in 1981. Substantial upgrades to the system took place between 2014 and 2015. A second wet well was added at the main pumping station, increasing the pumping capacity to 145 l/s, and a continuous chemical feed system for phosphorus removal was added along a new forcemain from the pumping station to the lagoons. The lagoon system was expanded by incorporating the former Nestle lagoon cells, creating a five cell system, and the existing municipal lagoon cells were converted to polishing/effluent storage ponds with the addition of aeration to both cells.

The lagoon system's design capacity was increased from 1046 m³/d to 1660 m³/d following the upgrades. However, the Ministry required that testing be undertaken to confirm the lagoon would be able to perform to the required effluent criteria when the facility reached the new rated capacity. The testing took place and a report was submitted, but not deemed by the Ministry to provide enough evidence that the lagoon would be able to meet all necessary requirements when operating at full capacity. Rather than extend the timeline to continue the testing, the Ministry removed the performance testing requirement from the ECA and replaced it with a requirement in the annual report to review performance as flows increase. The amended ECA # 6657-BPYPVL was issued June 1, 2020.

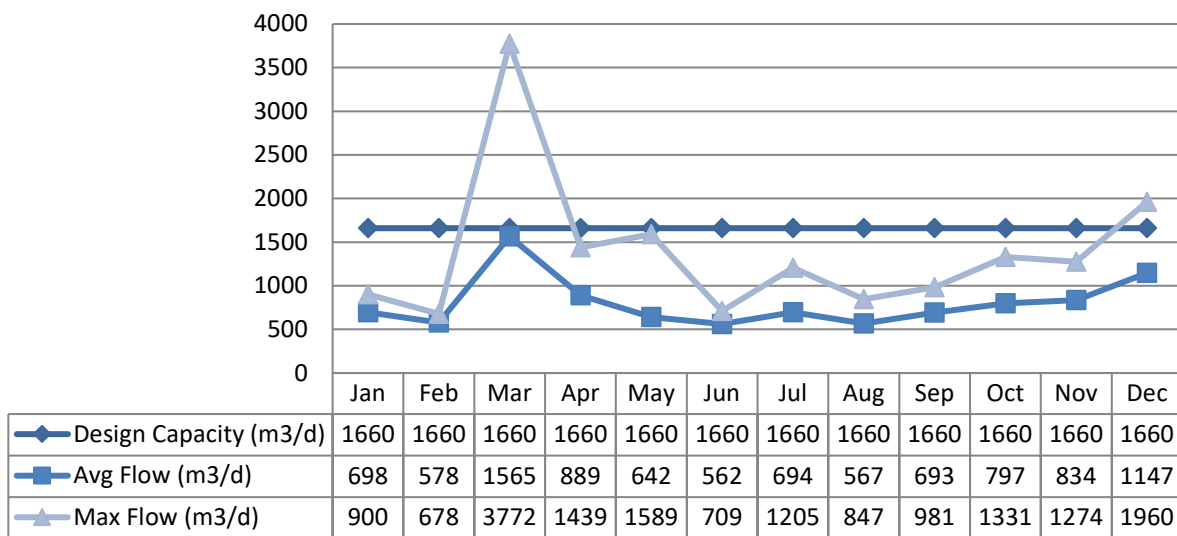
Effluent from the lagoons is discharged in the spring and in the fall via a 600 mm diameter pipe which extends from the treatment facility to an outlet in the South Nation River.

Wastewater System Flows

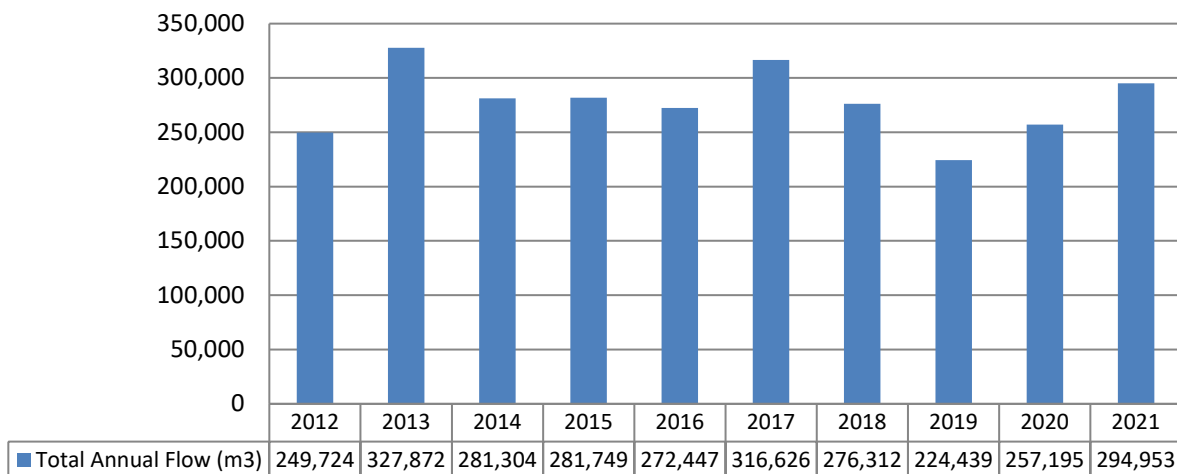
The hydraulic flows reaching the sewage lagoons in 2021 averaged 806 m³/day which represents 48.6 % of the 1,660 m³/day design capacity.

Raw Flows

2021 Raw Flows:



Annual Raw Flow Comparison:



Effluent Flow

A total of 191,005 m³ of effluent was discharged from Chesterville's sewage lagoons in 2021 with 120,659 m³ discharged in the spring and 70,346 m³ discharged in the fall.

Effluent Quality Assurance or Control Measures

Effluent control measures include pre-discharge sampling and testing of lagoon cell contents prior to seasonal discharges. The samples are collected by OCWA's competent and licensed staff using approved methods and protocols for sampling including those specified in the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works", the Ministry's publication, "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" and the publication, "Standard Methods for the Examination of Water and Wastewater".

All effluent samples collected during the reporting period were submitted to Caduceon in Ottawa for analysis, with the exception of pH, temperature and unionized ammonia. Caduceon is accredited by the Canadian Association for Laboratory Accreditation (CALA). Accredited labs must meet strict provincial guidelines including an extensive quality assurance/quality control program. By choosing these laboratories, OCWA is ensuring appropriate control measures are undertaken during sample analysis.

Elevated total phosphorus and total suspended solid concentrations were detected in cell contents sampling from the polishing cells prior to the spring discharge in 2021. Jar testing was performed, and the East and West lagoon cells were treated with approximately 80 mg/L (21,000 L) of aluminum sulphate for phosphorus control prior to the discharge.

The pH and temperature parameters were analyzed in the field at the time of sample collection by certified operators to ensure accuracy and precision of the results obtained. Un-ionized ammonia was calculated using the total ammonia nitrogen concentration, pH and temperature as required by the facility's ECA.

Effluent Quality

The average concentrations of carbonaceous biochemical oxygen demand (CBOD₅), total phosphorus (TP) and total ammonia nitrogen (TAN) remained below the effluent objectives and limits outlined in the facility's ECA during both the spring and fall lagoon discharges.

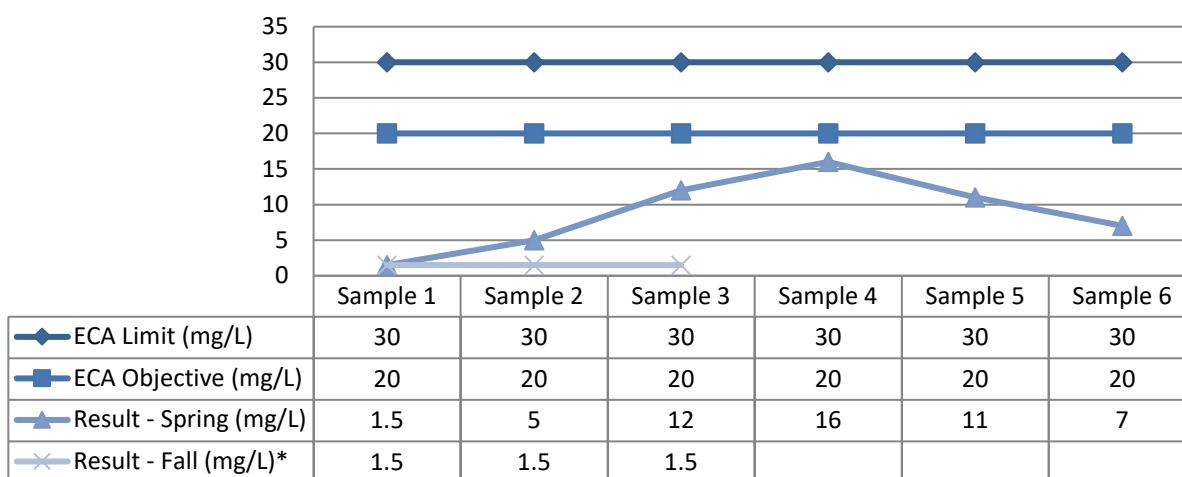
Effluent pH remained within the objective and limit specified in the ECA during the spring and fall discharge however, two out of six samples from the spring discharge slightly exceeded the objective. The objective level of non-detectable was exceeded for undissociated hydrogen sulphide (H₂S) during both discharge periods, although the measured concentration remained quite low.

The average concentration of total suspended solids (TSS) exceeded the compliance limit during the spring discharge in 2021; however, during the fall discharge TSS remained below the objective and the limit specified in the ECA. Please refer to the non-compliance correspondence submitted to the Ministry for more information (Appendix C).

The results from the spring and fall discharge periods are tabulated below. Please refer to the Performance Assessment Reports in Appendix A for details.

Carbonaceous Biochemical Oxygen Demand (5-Day)

Discharge Period	Seasonal Average (mg/L)	Objective (mg/L)	Limit (mg/L)	Exceedance
Spring	8.8	20	30	No
Fall	1.5	20	30	No

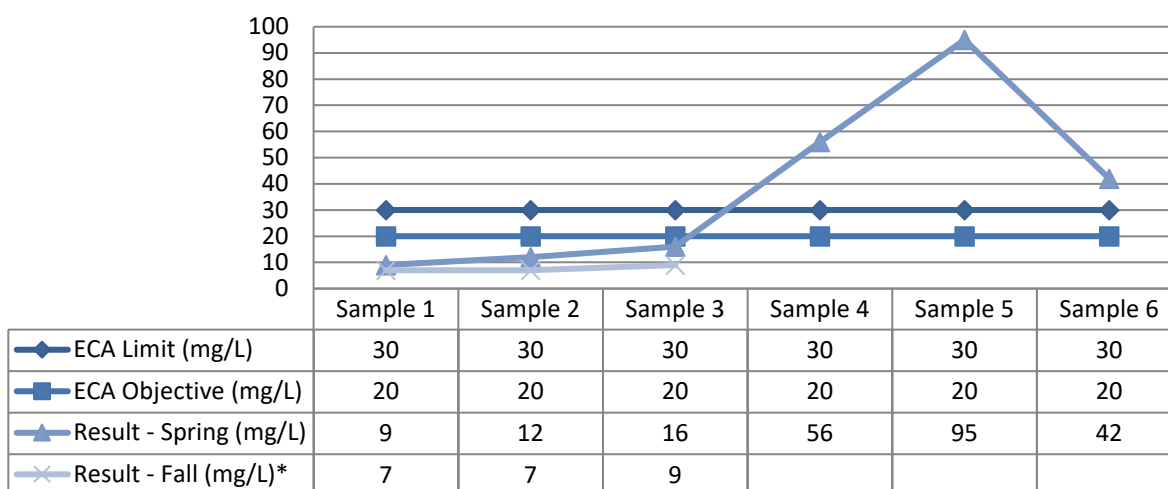
Effluent CBOD₅ Results:

* A total of three samples were collected during the fall discharge

Total Suspended Solids

Discharge Period	Seasonal Average (mg/L)	Objective (mg/L)	Limit (mg/L)	Exceedance
Spring	38.3	20	30	Yes*
Fall	7.7	20	30	No

*Please see the non-compliance correspondence to the Ministry attached in Appendix C.

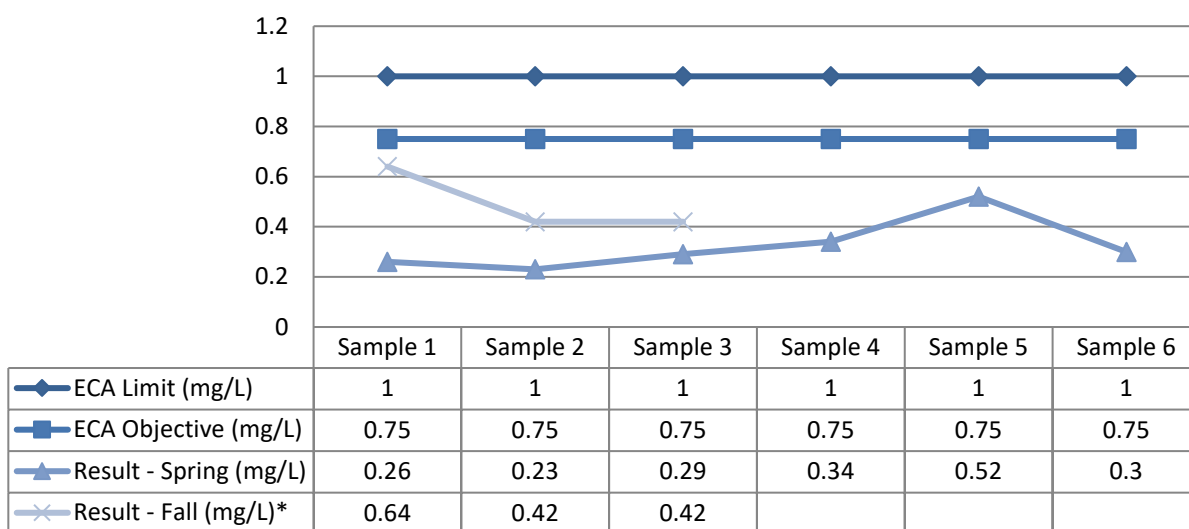
Effluent TSS Results:

* A total of three samples were collected during the fall discharge

Total Phosphorus

Discharge Period	Seasonal Average (mg/L)	Objective (mg/L)	Limit (mg/L)	Exceedance
Spring	0.32	0.75	1.0	No
Fall	0.50	0.75	1.0	No

Discharge Period	Annual Average (mg/L)	Limit (kg/d)	Exceedance
2021	0.20	1.66	No

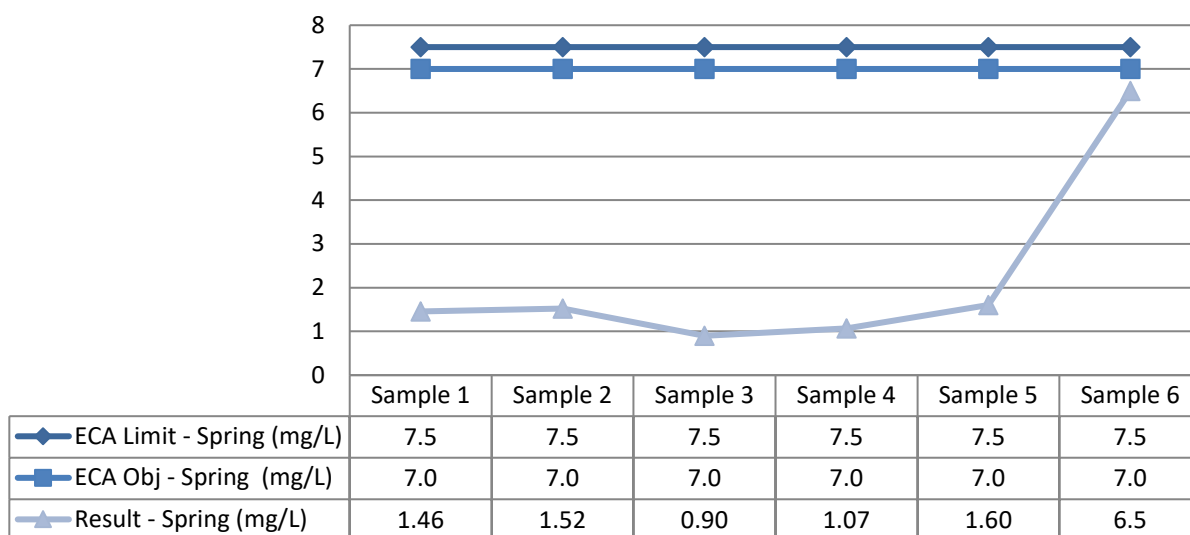
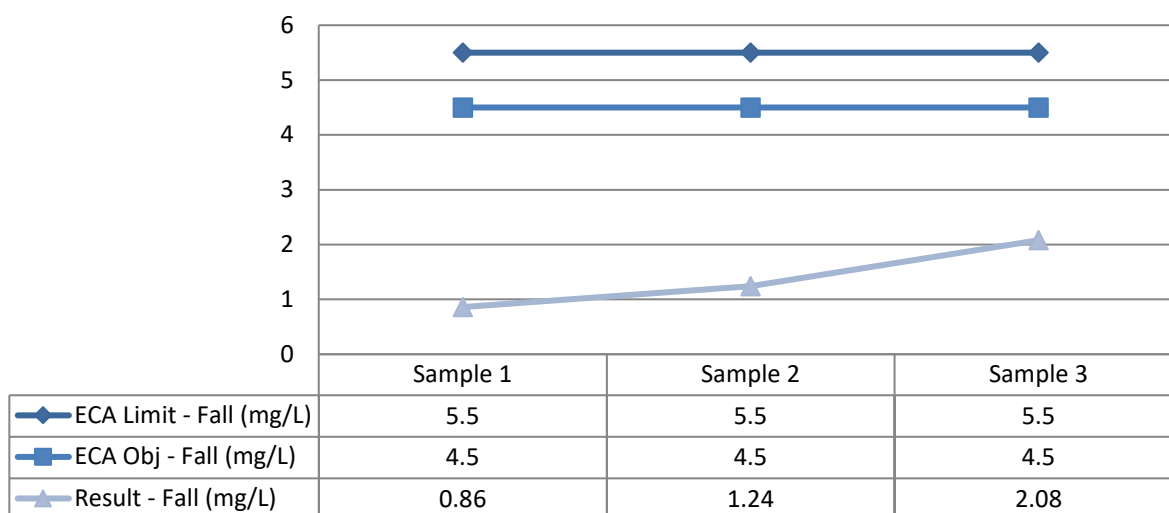
Effluent TP Results:

* A total of three samples were collected during the fall discharge

Total Ammonia Nitrogen

Discharge Period	Seasonal Average (mg/L)	Objective (mg/L)	Limit (mg/L)	Exceedance
Spring (Mar. 1 – Mar. 31)*	N/A	9.0	11.0	No
Spring (Apr. 1 – Apr. 30)*	2.2	7.0	7.5	No
Fall (Nov. 1 – Dec. 16)	1.4	4.5	5.5	No

* The spring discharge began April 14, 2021

Effluent TAN Results for Spring Discharge Period:**Effluent TAN Results for Fall Discharge Period:**

Hydrogen Sulphide

Discharge Period	Seasonal Average (mg/L)	Objective (mg/L)	Limit (mg/L)	Exceedance
Spring	0.003	Non-Detectable	0.02	Yes – Objective
Fall	0.002	Non-Detectable	0.02	Yes – Objective

Effluent Undissociated H₂S Results for Spring Discharge Period:

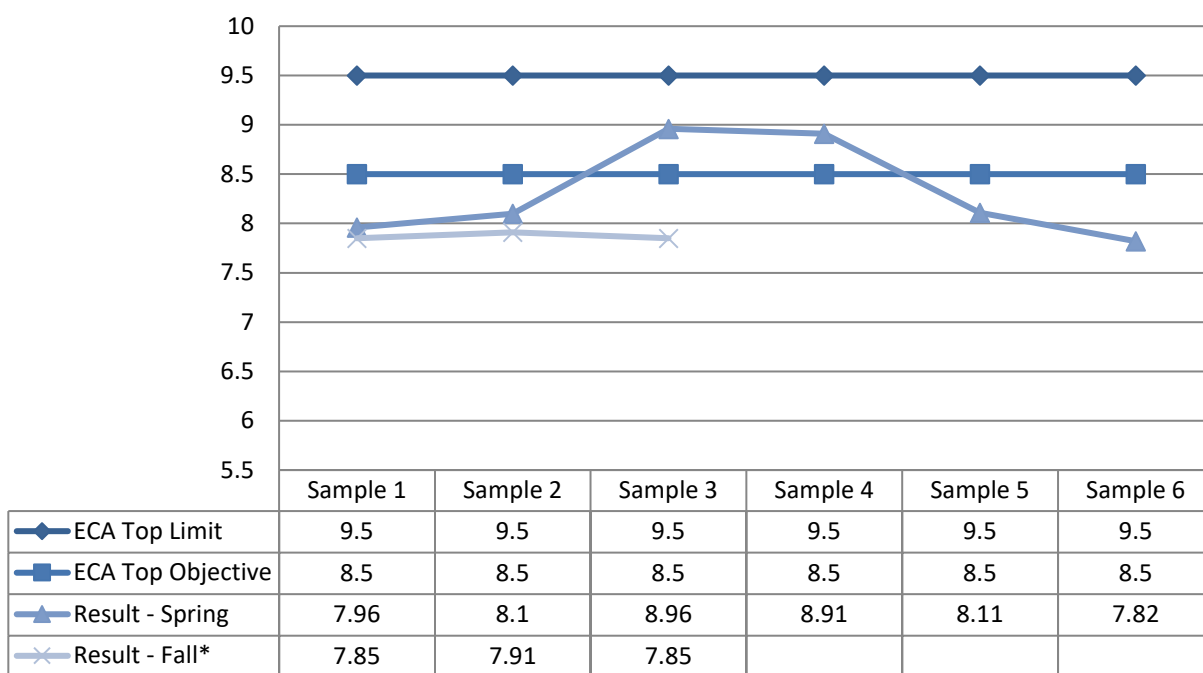
	14-Apr	16-Apr	19-Apr	23-Apr	26-Apr	30-Apr	Average
S ²⁻ (mg/L)	0.02	0.03	0.05	0.08	<0.1	0.06	0.05
pH	7.96	8.1	8.96	8.91	8.11	7.82	8.31
Temp	14.3	12.5	15.4	15.1	11.1	12.2	N/A
% Undissociated H ₂ S (from table)	14.50	10.18	1.29	1.64	1.85	18.67	N/A
Undissociated H ₂ S (mg/L)	0.0029	0.0031	0.0006	0.0013	ND	0.0112	0.003

Effluent Undissociated H₂S Results for Fall Discharge Period:

	08-Nov	12-Nov	15-Nov	Average
S ²⁻ (mg/L)	0.01	0.01	0.01	0.01
pH	7.85	7.91	7.85	7.87
Temp	12.9	10.8	5.4	N/A
% Undissociated H ₂ S (from table)	18.44	16.06	22.71	N/A
Undissociated H ₂ S (mg/L)	0.0018	0.0016	0.0023	0.002

pH

Discharge Period	Seasonal Average	Limit	Objective	Exceedance
Spring	8.31	6.0 – 9.5	6.5 – 8.5	No
Fall	7.87	6.0 – 9.5	6.5 – 8.5	No

Effluent pH Results:

* A total of three samples were collected during the fall discharge

Acute Lethality

There were two samples collected in 2021 and tested for acute lethality to Rainbow Trout and Daphnia Magna. In accordance with the ECA, sampling has been reduced to once annually (alternating spring and fall) after four consecutive discharges indicated the effluent was not lethal. Results are displayed as % mortality. An adverse result is a >50% mortality rate.

Sample Period	Rainbow Trout	Daphnia Magna
Fall Discharge - Start	0 %	0 %
Fall Discharge - End	0 %	0 %

Operating Issues

The ECA limit for total suspended solids (TSS) was exceeded during the spring discharge in 2021. The elevated TSS detected in the samples can be attributed to *Daphnia magna* and other aquatic microorganisms found in the samples as well as berm erosion which occurred following the sludge removal from the west polishing cell in 2019. OCWA is currently investigating berm rehabilitation along the polishing cells.

Maintenance

Flow Meter Calibration and Maintenance

Copies of the flow meter calibration certificates for 2021 are attached in Appendix B.

Maintenance Summary

Description
<ul style="list-style-type: none"> - Performed routine sewer flushing and wet well cleaning - Repaired/upgraded manholes in collection system - Sewage backup – 77 South St East, caused by lateral blockage on Township side - Completion of Nestle SPS equipment installation - Electrical & Instrumentation work at Nestle SPS (Outpost, SCADA, Falcon Alarms) - Multi-ranger with pressure sensor installed at Nestle SPS - Generator maintenance (annual maintenance and new recirculation pump) at Water St SPS

Notice of Modifications

Date	Process	Modification	Status
None to report.			

Sludge Generation

Sludge depth is monitored periodically, and plans for sludge removal are made as required for optimal operation of the lagoon system. Sludge levels in all ponds were measured in 2020. The measurements were as follows:

Lagoon Cell	Sludge Depth
Primary Cell No. 1	1 – 2"
Primary Cell No. 2	1 – 3"
Secondary Cell	0 – 1"
Polishing Cell (East)	0 – 4"
Polishing Cell (West)	0"

Approximately 6500 m³ of sludge was removed from the West polishing cell in 2019.

Summary of Complaints

There were no complaints documented during the reporting period.

Summary of Abnormal Discharge Events

Bypass/Overflow/Spills

No bypasses, overflows, or spills occurred during the reporting period.

Appendix A

Performance Assessment Reports

ONTARIO CLEAN WATER AGENCY PERFORMANCE ASSESSMENT REPORT

MUNICIPALITY: TOWNSHIP OF NORTH DUNDAS
 PROJECT: CHESTERVILLE WASTEWATER TREATMENT SYSTEM
 PROJECT NUM.: 5677
 WORKS NUM.: 110000114
 DESCRIPTION: THREE SEWAGE PUMPING STATIONS AND A FIVE CELL LAGOON SYSTEM
INCLUDING TWO PRIMARY CELLS, ONE SECONDARY CELL, AND TWO POLISHING CELLS

YEAR: 2021
 WATER COURSE: SOUTH NATION RIVER
 DESIGN CAPACITY: 1660 m³/day

MONTH	FLOWS			EFFLUENT		BIOCHEMICAL O ₂ DEMAND				SUSPENDED SOLIDS			PHOSPHORUS			TKN
	Total Flow (m ³)	Avg Day Flow (m ³)	Max Day Flow (m ³)	Effluent Flow (m ³)	Discharge Duration (days)	Avg. Alum Dosage (mg/L)	Avg Raw BOD (mg/L)	Avg Eff CBOD (mg/L)	Percent Removal (%)	Avg Raw SS (mg/L)	Avg Eff SS (mg/L)	Percent Removal (%)	Avg Raw PHOS. (mg/L)	Avg Eff PHOS. (mg/L)	Percent Removal (%)	Avg Raw TKN (mg/L)
JAN	21,627	698	900			77.6	132			165			4.22			37.1
FEB	16,173	578	678			88.3	151			130			5.42			49.5
MAR	48,517	1,565	3,772			71.4	41			200			1.90			17.6
APR	26,682	889	1,439	120,659	17	72.0	100	8.8		90	38.3		3.27	0.32		29.8
MAY	19,914	642	1,589			86.0	73			80			5.90			45.4
JUN	16,850	562	709			80.9	115			92			4.40			36.9
JUL	21,529	694	1,205			72.6	205			114			5.70			61.9
AUG	17,572	567	847			56.3	83			144			7.09			39.8
SEPT	20,795	693	981			71.7	99			102			5.25			46.7
OCT	24,700	797	1,331			79.4	120			162			4.96			43.4
NOV	25,022	834	1,274	70,346	8	40.4	66	1.5		72	7.7		0.50	0.50		4.2
DEC	35,572	1,147	1,960			52.0	68			80			4.17			41.6
TOTAL	294,953			191,005	25											
AVG		806					104	7.6	92.8	119	28.1	76.4	4.4	0.38	91.4	37.8
MAX			3,772			70.7	205			200			7.09			
CRITERIA		1,660						30			30			1.0		

COMMENTS: Percent removal based on 12 months of raw composite samples

ONTARIO CLEAN WATER AGENCY LAGOON PERFORMANCE ASSESSMENT REPORT

MUNICIPALITY: TOWNSHIP OF NORTH DUNDAS
PROJECT: CHESTERVILLE WASTEWATER TREATMENT LAGOONS
PROJECT NUM.: 5677
WORKS NUM.: 110000114
DESCRIPTION: A FIVE CELL LAGOON SYSTEM INCLUDING TWO PRIMARY CELLS, ONE SECONDARY CELL, AND TWO POLISHING CELLS

YEAR: 2021
WATER COURSE: SOUTH NATION RIVER
DESIGN CAPACITY: 1660 m³/day

Sample Twice Weekly	SAMPLE RESULTS	SPRING							120,659 m ³		
	DATE	14-Apr	16-Apr	19-Apr	23-Apr	26-Apr	30-Apr	Average	ECA Objective	ECA Limit*	
	CBOD5 (mg/L)	<3	<10	12	16	11	7	8.8	20	30	
	TSS (mg/L)	9	12	16	56	95	42	38.3	20	30	
	TP (mg/L)	0.26	0.23	0.29	0.34	0.52	0.3	0.32	0.75	1.0	
	**NH ₃ (mg/L)	1.46	1.52	0.90	1.07	1.60	6.5	2.2	7.0	7.5	
	S ²⁻ (mg/L)	0.02	0.03	0.05	0.08	<0.1	0.06				
	TKN (mg/L)	3.8	4.2	5.3	6	6.7	6.4				
	NO ₂ (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	0.1				
	NO ₃ (mg/L)	<0.1	<0.1	<0.1	<0.1	0.1	<0.1				
	E.coli (cfu/100mL)	14	81	106	134	204	194				

* ECA limit. Monthly average concentration shall not exceed the corresponding maximum concentration

** NH3 Objectives: March - 9.0 mg/L; April - 7.0 mg/L; NH3 Limits: March - 11.0 mg/L, Apr - 7.5 mg/L

Unionized NH3 calculations	On Site Temperature	14.3	12.5	15.4	5.1	11.1	12.2
	On Site pH	7.96	8.1	8.96	8.91	8.11	7.82
	NH3-N (lab)	1.46	1.52	0.90	1.07	1.6	6.5
	unionized NH3-N (calc)	0.034	0.042	0.184	0.099	0.041	0.093

								Average	Objective	Limit
Undissociated H2S Calculations	S ²⁻ (mg/L)	0.02	0.03	0.05	0.08	<0.1	0.06	0.05	N/A	N/A
	pH	7.96	8.1	8.96	8.91	8.11	7.82	8.31	6.5 - 8.5	6.0 - 9.5
	Temp	14.3	12.5	15.4	15.1	11.1	12.2	N/A	N/A	N/A
	% Undissociated H2S	14.50	10.18	1.29	1.64	1.85	18.67	N/A	N/A	N/A
	Undissociated H ₂ S	0.0029	0.0031	0.0006	0.0013	ND	0.0112	0.003	ND	0.02

TOTAL LOADING	
CBOD5 (kg)	1,056
TSS (kg)	4,625
TP (kg)	39
NH ₃ (kg)	262

Acute Lethality	Start	End
Rainbow Trout	0%	0%
Daphnia Magna	0%	0%

* After 4 consecutive discharge seasons not indicating acute lethality testing can be reduced to once annually at end of discharge alternating spring and fall.

PRE-DISCHARGE RESULTS	31-Mar-21	East	West
	CBOD5 (mg/L)	6	15
	TSS (mg/L)	26	34
	TP (mg/L)	0.93	0.66
	NH3	1.54	2.55
	H2S	<0.05	<0.05
	E. Coli	50	4

Sample Twice Weekly	SAMPLE RESULTS	FALL				70,346 m ³		
	DATE	08-Nov	12-Nov	15-Nov	Average	ECA Objective	ECA Limit	
	CBOD5 (mg/L)	<3	<3	<3	1.5	20	30	
	TSS (mg/L)	7	7	9	7.7	20	30	
	TP (mg/L)	0.64	0.42	0.42	0.5	0.75	1.0	
	**NH ₃ (mg/L)	0.86	1.24	2.08	1.4	4.5	5.5	
	S ²⁻ (mg/L)	0.01	0.01	0.01				
	TKN (mg/L)	2.9	3	3.9				
	NO ₂ (mg/L)	<0.1	<0.1	<0.1				
	NO ₃ (mg/L)	0.10	0.30	0.10				
	E.coli (cfu/100mL)	240	6300	220				

* ECA limit. Seasonal average concentration shall not exceed the corresponding maximum concentration

** NH3 Objective Nov 1 - Dec 16: 4.5 mg/L; NH3 Limit Nov 1 - Dec 16: 5.5 mg/L

Unionized NH3 calculations	On Site Temperature	12.9	10.8	5.4
	On Site pH	7.85	7.91	7.85
	NH3-N (lab)	0.86	1.24	2.08
	unionized NH3-N (calc)	0.014	0.020	0.019

					Average	Objective	Limit
Undissociated H2S Calculations	S ²⁻ (mg/L)	0.01	0.01	0.01	0.01	N/A	N/A
	pH	7.85	7.91	7.85	7.87	6.5 - 8.5	6.0 - 9.5
	Temp @	12.9	10.8	5.4	N/A	N/A	N/A
	% Undissociated H2S	18.44	16.06	22.71	N/A	N/A	N/A
	Undissociated H ₂ S	0.0018	0.0016	0.0023	0.002	ND	0.02

TOTAL LOADING	
CBOD5 (kg)	106
SS (kg)	539
TP (kg)	35
NH ₃ (kg)	98

Acute Lethality	Start	End
Rainbow Trout	0%	0%
Daphnia Magna	0%	0%

* After 4 consecutive discharge seasons not indicating acute lethality testing can be reduced to once annually at end of discharge alternating spring and fall.

PRE-DISCHARGE RESULTS		East	West
	CBOD5 (mg/L)	<3	4
	SS (mg/L)	6	5
	TP (mg/L)	0.60	0.55
	NH3	0.09	1.05
	H2S	0.010	0.01
	E. Coli	226	168

ANNUAL LOADING TP (KG/D)	kg/day
	0.20
ECA LIMIT	1.66

**ONTARIO CLEAN WATER AGENCY
CHESTERVILLE SEWAGE LAGOON 2021**

DETERMINATION OF UN-IONIZED AMMONIA (NH₃) IN WASTEWATER EFFLUENT

Sample Date	Sample Temperature (°C)	Degrees Kelvin	Dissociation Constant pKa	Sample pH on-site	Fraction of Un-ionized Ammonia	Total Ammonia (mg/L) (NH ₃ +NH ₄ +as N)	Un-ionized Ammonia (mg/L)
14-Apr	14.3	287.45	9.59	7.96	0.0230	1.46	0.034
16-Apr	12.5	285.65	9.65	8.10	0.0276	1.52	0.042
19-Apr	15.4	288.55	9.55	8.96	0.2041	0.90	0.184
23-Apr	5.1	278.25	9.90	8.91	0.0926	1.07	0.099
26-Apr	11.1	284.25	9.69	8.11	0.0254	1.60	0.041
30-Apr	12.2	285.35	9.66	7.82	0.0143	6.50	0.093

Sample Date	Sample Temperature (°C)	Degrees Kelvin	Dissociation Constant pKa	Sample pH on-site	Fraction of Un-ionized Ammonia	Total Ammonia (mg/L) (NH ₃ +NH ₄ +as N)	Un-ionized Ammonia (mg/L)
08-Nov	12.9	286.05	9.63	7.85	0.0162	0.86	0.014
12-Nov	10.8	283.95	9.70	7.91	0.0158	1.24	0.020
15-Nov	5.4	278.55	9.89	7.85	0.0090	2.08	0.019

Appendix B

Flow Meter Calibration Reports

Work Order #	2173248	Meter Flow Verification (1y) 5677	Status COMP
Job Plan #	METFLO01-A	METER FLOW ANNUAL GENERIC	
Project	NORDUY5677-M100		
Type	PM		Scheduled Start Date 03-Mar-21
Criticality	3		
Class	Calibration		

Location 5677, Chesterville WWT Lagoon & CS, Process, Headworks, Pumping

Asset	0000168525	METER FLOW RAW SEWAGE	Status OPERATING
Building	PUMPING STATION BUILDING		
Level	G		
Qualifier	CHESTERVILLE WWTP. SPS DIESEL ROOM RAW SEWAG		
Manufacturer	TOSHIBA		
Model	LF654NM1BNCAAF		
Serial Number	1865030004		
Warranty Expiration			
Install Date	01-Oct-19		Purchase Price \$ 13,000.00
Asset Comments	PIPE SIZE: 12" WELL DIAMETER: 2.743M PIPE MATERIAL: DUCTILE IRON WALL THICKNESS: 0.34" O.D.: 13.2" I.D: 12.52 WELL RADIUS: 137.16 PLANT METER MAKE: DANFOSS TYPE: MAGNETIC MODEL: 3100173F3001IP67 SERIAL: 3100-122905T433 CALIBRATED RANGE: 0-100% OUTPUT: 4-20 mAdc PERCENT OF ACCURACY - RANGE - CLASS - CALIBRATION RANGE - DATE CODE - OUTPUT AMPERAGE - 4-20MAOUTPUT TYPE (PULSE/MILLIAMPS) - MILLAMPDESIGN PRESSURE - SCADA TAG # - CAPACITY/RATING - M3TYPE/ FORM - MAGLAYING LENGTH - CATALOG NUMBER -		

Reported By MAXADMIN
Lead
Crew Work Group 1225 Meter Flow Verification Team 2 Chesterville

Sequence	Asset	Location	Inspected
1	0000170849 METER FLOW RAW SEWAGE ABB	5677-WLNE-P 5677, Chesterville - Nestle SPS, Process	<input checked="" type="checkbox"/>
2	0000261009 METER FLOW EFFLUENT GREYLINE	5677-WLCH-P-PC 5677, Chesterville WWT Lagoon & CS, Process, Process Control & Monitoring	<input checked="" type="checkbox"/>

Asset #	Meter	Last Reading	Date	Current Reading	Date
0000168525					
0000170849	AS LEFT	AS LEFT ASSET CONDITION			
0000261009	AS LEFT	AS LEFT ASSET CONDITION			

Safety Message

This Work Order (and accompanying Maintenance Procedure) have been developed to aid field personnel in the care and maintenance of the specified equipment. However, maintenance personnel are expected to look for and correct any defects which are not anticipated in the procedure. This document may not provide all the technical information that may be required, and it may be necessary to refer to the manufacturer's manual for further details.

The "As Found" and "As Left" readings, as well as any abnormalities found and any repairs carried out, are to be recorded in the Maximo WMS System.

Isolate and de-energize equipment in accordance with the lock-out procedure.

Take time to identify hazards and plan how each hazard will be eliminated or controlled. Work practices must be in accordance with the Occupational Health & Safety Act and the Ontario Clean Water Agency safety manual.

Ensure direct supervisor or their designate have been notified of entry into the site. This notification should provide approximate time and duration. On completion of duties notification is to be given that site has been vacated and secured.

Task	Description
10	RUNNING CHECKS <ol style="list-style-type: none"> 1) Verify calibration parameters and programming parameters where applicable. 2) Ensure proper connections and grounding. 3) Check display for any alarm or error codes.
20	HAVE QUALIFIED TECHNICIAN CALIBRATE UNIT <ol style="list-style-type: none"> 1. Have a qualified technician calibrate the unit, using actual flow method or flow simulator. 2. Calibration records must be kept for a period of five years. 3. Records shall include the level of accuracy of the equipment as found and as left. 4. Calibration test equipment shall be certified annually and certification dates recorded on the calibration record. Some test equipment may not require calibration
30	RECORD ADJUSTMENTS AND VERIFY OUTPUTS <ol style="list-style-type: none"> 1. Record any adjustments, modifications or replacements made to the equipment during the calibration. 2. Verify accuracy of electronic outputs to the end device as required based on theoretical versus actual values .{Chart recorders, SCADA, Outpost 5}. 3. Ensure all nameplate data is recorded and entered in WMS.
40	COMPLETE A VERIFICATION SHEET FOR EACH FLOW METER, POST IT AND ATTACH TO WORK ORDER Note: Calibration sheet must be signed and original kept on site in the SOP binder.

For Field-Use Only - Completion Elements:

Work Log: <div style="text-align: center; padding: 20px 0;">Annual Inspection & Calibration of Flow Meters</div>
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Labour			
Date	Reg/Prem.	Hours	Memo



Completed By

Please Print Name

Stephane Barbarie

Signature

Stephane Barbarie

Date

April 6, 2021

Appendix C

Ministry Correspondence

May 18, 2021

Ms. Tracy Hart
District Manager, Ministry of the Environment, Conservation and Parks
Ottawa District Office
tracy.hart@ontario.ca

Subject: Chesterville Sewage Lagoon - Notification of Non-Compliance with TSS Limit

This letter provides written notification of non-compliance with the effluent concentration limit for Total Suspended Solids (TSS) specified in Schedule C of ECA #6657-BPYPVL during the spring discharge of Chesterville's Sewage Lagoon. This letter confirms the verbal notification of non-compliance provided by OCWA to the Ontario Ministry of the Environment, Conservation and Parks' Spills Action Centre on May 11, 2021 (Reference # 4238-C2WK2Y).

The following effluent parameter was exceeded:

Parameter	Type of Limit	Type of Sample	Result	ECA Limit
Total Suspended Solids	Seasonal Average Concentration	Grab	38.3 mg/L	30.0 mg/L

The spring discharge of Chesterville's sewage lagoons began on April 14, 2021 and ended on April 30, 2021. Six samples were collected during the discharge. The elevated TSS in the samples can be attributed to *Daphnia magna* and other aquatic microorganisms that were present in the samples as well as to wind action resulting in some berm erosion which has occurred following sludge removal from the west polishing cell. OCWA is currently investigating berm rehabilitation along the polishing cells.

It should be noted that all other parameters remained well below the ECA limits throughout the lagoon discharge. A complete listing of all sample results obtained during the spring discharge can be found in the Lagoon Discharge PAR, attached.

If you have any questions or concerns, please contact me at (613) 448-3098.

Sincerely,



Dawn Crump
Process & Compliance Technician
Seaway Valley Cluster

Cc: Angela Rutley, CAO, Township of North Dundas
Khurram Tunio, Director of Public Works, Township of North Dundas
Stephane Barbarie, Senior Operations Manager, OCWA
Patrick Lalonde, Provincial Officer, MECP

**ONTARIO CLEAN WATER AGENCY
LAGOON PERFORMANCE ASSESSMENT REPORT**

MUNICIPALITY: TOWNSHIP OF NORTH DUNDAS
PROJECT: CHESTERTVILLE WASTEWATER TREATMENT LAGOONS
PROJECT NUM.: 5677
WORKS NUM.: 110000114
DESCRIPTION: A FIVE CELL LAGOON SYSTEM INCLUDING TWO PRIMARY CELLS, ONE SECONDARY CELL, AND TWO POLISHING CELLS

YEAR: 2021
WATER COURSE: SOUTH NATION RIVER
DESIGN CAPACITY: 1660 m³/day

	SAMPLE RESULTS	SPRING							121,725 m ³		
		14-Apr	16-Apr	19-Apr	23-Apr	26-Apr	30-Apr	Average	ECA Objective	ECA Limit*	
Sample Twice Weekly	DATE										
	CBOD5 (mg/L)	<3	<10	12	16	11	7	8.8	20	30	
	TSS (mg/L)	9	12	16	56	95	42	38.3	20	30	
	TP (mg/L)	0.26	0.23	0.29	0.34	0.52	0.3	0.32	0.75	1.0	
	**NH ₃ (mg/L)	1.46	1.52	0.90	1.07	1.60	6.5	2.2	7.0	7.5	
	S ² (mg/L)	0.02	0.03	0.05	0.08	<0.1	0.06				
	TKN (mg/L)	3.8	4.2	5.3	6	6.7	6.4				
	NO ₂ (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	0.1				
	NO ₃ (mg/L)	<0.1	<0.1	<0.1	<0.1	0.1	<0.1				
	E.coli (cfu/100mL)	14	81	106	134	204	194				

* ECA limit. Monthly average concentration shall not exceed the corresponding maximum concentration

** NH3 Objectives: March - 9.0 mg/L; April - 7.0 mg/L; NH3 Limits: March - 11.0 mg/L, Apr - 7.5 mg/L

Unioinized NH3 calculations	On Site Temperature	14.3	12.5	15.4	5.1	11.1	12.2
	On Site pH	7.96	8.1	8.96	8.91	8.11	7.82
	NH3-N (lab)	1.46	1.52	0.90	1.07	1.6	6.5
	unionized NH3-N (calc)	0.034	0.042	0.184	0.099	0.041	0.093

Undissociated H2S Calculations								Average	Objective	Limit
	S ² (mg/L)	0.02	0.03	0.05	0.08	<0.1	0.06	0.05	N/A	N/A
	pH	7.96	8.1	8.96	8.91	8.11	7.82	8.31	6.5 - 8.5	6.0 - 9.5
	Temp	14.3	12.5	15.4	15.1	11.1	12.2	N/A	N/A	N/A
	% Undissociated H2S	14.50	10.18	1.29	1.64	1.85	18.5	N/A	N/A	N/A
	Undissociated H ₂ S	0.0029	0.0031	0.0006	0.0013	ND	0.0111	0.0020	ND	0.02

TOTAL LOADING	
CBOD5 (kg)	1.065
TSS (kg)	4.666
TP (kg)	39
NH ₃ (kg)	265

Acute Lethality	Start	End
Rainbow Trout	0%	0%
Daphnia Magna	0%	0%

* After 4 consecutive discharge seasons not indicating acute lethality testing can be reduced to once annually at end of discharge alternating spring and fall.

PRE-DISCHARGE RESULTS	31-Mar-21	East	West
	CBOD5 (mg/L)	6	15
	TSS (mg/L)	26	34
	TP (mg/L)	0.93	0.66
	NH3	1.54	2.55
	H2S	<0.05	<0.05
	E. Coli	50	4

	SAMPLE RESULTS	FALL							m ³		
									Average	ECA Objective	ECA Limit
Sample Twice Weekly	DATE										
	CBOD5 (mg/L)								7.2	20	30
	TSS (mg/L)								#DIV/0!	20	30
	TP (mg/L)								#DIV/0!	0.75	1.0
	**NH ₃ (mg/L)								#DIV/0!	4.5	5.5
	S ² (mg/L)										
	TKN (mg/L)										
	NO ₂ (mg/L)										
	NO ₃ (mg/L)										
	E.coli (cfu/100mL)										

* ECA limit. Seasonal average concentration shall not exceed the corresponding maximum concentration

** NH3 Objective Nov 1 - Dec 16: 4.5 mg/L; NH3 Limit Nov 1 - Dec 16: 5.5 mg/L

Unioinized NH3 calculations	On Site Temperature						
	On Site pH						
	NH3-N (lab)						
	unionized NH3-N (calc)						

Undissociated H2S Calculations								Average	Objective	Limit
	S ² (mg/L)							#DIV/0!	N/A	N/A
	pH							#DIV/0!	6.5 - 8.5	6.0 - 9.5
	Temp							N/A	N/A	N/A
	% Undissociated H2S							N/A	N/A	N/A
	Undissociated H ₂ S							#DIV/0!	ND	0.02

TOTAL LOADING	
CBOD5 (kg)	0
SS (kg)	#DIV/0!
TP (kg)	#DIV/0!
NH ₃ (kg)	#DIV/0!

Acute Lethality	Start	End
Rainbow Trout	0%	0%
Daphnia Magna	0%	0%

* After 4 consecutive discharge seasons not indicating acute lethality testing can be reduced to once annually at end of discharge alternating spring and fall.

PRE-DISCHARGE RESULTS		East	West
	CBOD5 (mg/L)		
	SS (mg/L)		
	TP (mg/L)		
	NH3		
	H2S		
	E. Coli		

ANNUAL LOADING TP (KG/D)	kg/day
ECA LIMIT	1.66